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EXAMINER	
SWOPE, SHERIDAN	

ART UNIT	PAPER NUMBER
1652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,692	NAYAR ET AL.	
	Examiner	Art Unit	
	SHERIDAN SWOPE	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *0107; 0108*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-21 are pending.

Claims 1-21 are currently directed to a single invention, drawn to a dry powder composition comprising recombinant human alpha 1-antitrypsin, class 530, subclass 322. Claims 1-21 are hereby examined.

Priority

The priority date granted for the instant invention is November 10, 2003, the filing date of US 60/518,803, which disclosed the elected invention.

Claims-Objections

The claim set is objected to for not beginning with a sentence of which the claims are an object e.g., "We claim" or "The claims are".

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Double Patenting

> The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).
>
> A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).
> Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).
>
> An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim not is patentably distinct from the reference claim(s) because

the examined claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

Claims 1-21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088. Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 1-21 herein and Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088 are both directed to dry powder compositions comprising recombinant human alpha 1-antitrypsin. The claims differ in that Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088 also recite dry powder compositions comprising native human alpha 1-antitrypsin. The portion of the specification in US 10/579,088 that supports the recited composition includes embodiments that would anticipate Claims 1-21 herein, e.g., dry powder compositions comprising recombinant human alpha 1-antitrypsin, which are also the compositions specifically recited in Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088. Claims 1-21 herein cannot be considered patentably distinct over Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088 when there are specifically recited embodiments (dry powder compositions comprising recombinant human alpha 1-antitrypsin) that would anticipate Claims 1-21 herein. Alternatively, Claims 1-21 herein cannot be considered patentably distinct over Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088 when there are specifically disclosed embodiments in US 10/579,088 that supports Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of that application and falls within the scope of Claims 1-21 herein, because it would have been obvious to a skilled artisan to modify the compositions of Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088 by selecting a specifically disclosed embodiment that supports those claims, i.e., dry powder compositions comprising recombinant human alpha 1-antitrypsin, as disclosed in US 10/579,088. One having ordinary skill in the art would have

been motivated to do this, because such an embodiment is disclosed as being a preferred embodiment within Claims 1-3, 6, 8, 9, 12, 29, 31, and 32 of US 10/579,088.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112-Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for the following reasons.

For Claims 13 and 14, the phrase "equivalent to" renders the claim indefinite. Neither the specification nor the claims define what conditions would be "equivalent to" 50°C for 3 months. Therefore, Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claim Rejections - 35 USC § 112-First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Enablement

Claims 1-21 are rejected under 35 U.S.C. 112, first paragraph/lack of enablement. Although the specification describes analysis of dry powder compositions comprising a human alpha 1-antitrypsin, the specification fails to disclose the structure or sequence of said human

alpha 1-antitrypsin or its activity. The instant invention encompasses dry powder compositions comprising any alpha 1-antitrypsin protein having any structure and any function. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

In regards to this enablement rejection, the application disclosure and claims are compared per the factors indicated in the decision In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). These factors are considered when determining whether there is sufficient evidence to support a description that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is undue. The factors include but are not limited to: (1) the nature of the invention; (2) the breath of the claims; (3) the predictability or unpredictability of the art; (4) the amount of direction or guidance presented; (5) the presence or absence of working examples; (6) the quantity of experimentation necessary; (7) the relative skill of those skilled in the art. Each factor is here addressed on the basis of a comparison of the disclosure, the claims, and the state of the prior art in the assessment of undue experimentation.

Claims 1-21 are so broad as to encompass any dry powder composition comprising any alpha 1-antitrypsin protein having any function and any structure. The scope of these claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of proteins broadly encompassed by the claim. Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed

knowledge of the ways in which the protein's structure relates to its function. However, in this case the specification fails to disclose the structure or function of any such proteins.

While methods for determining the dependence of a proteins' function on its structure are known, it is not routine in the art to screen any number of human proteins for the desired activity, as encompassed by the instant claims. Furthermore, the positions within a protein's sequence where amino acid modifications can be tolerated with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the results of such alterations are unpredictable (Galye et al, 1993; Whisstock et al, 2003). In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of Claims 1-21, which encompasses any dry powder composition comprising any human alpha 1-antitrypsin having any structure and any function. The specification does not support the broad scope of Claims 1-21 because the specification does not establish: (A) the function of all proteins encompassed within the claims; (B) the structure of all proteins encompassed within the claims; (C) regions of the protein structure which may be modified without affecting the desired activity; (D) the general tolerance of the desired activity to modification and extent of such tolerance; (E) a rational and predictable scheme for choosing which, of the unlimited number of proteins, have the desired properties; and (G) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope

of the claims broadly including dry powder compositions comprising any number of proteins. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of the identity of sequences having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Written Description

Claims 1-21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. These claims are directed to dry powder compositions comprising any one of a genus of human alpha 1-antitrypsin proteins. The specification teaches the structure of no single representative species of such proteins. Moreover, the specification fails to describe the enzymatic, biological, or cellular function of said proteins. Given this lack of description of representative species encompassed by the genus of the claim, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-19 and 21 are rejected under 35 U.S.C. 102(b), as being anticipated by Eljamal et al, 1998 (US 5,780,014; IDS). Eljamal et al teach a dry powder composition comprising recombinant human alpha 1-antitrypsin (col 3, parg 5; col 6, parg 6), optionally with a salt and a buffer of neutral pH (parg bridging col 4-5; col 6, parg 7; col 7, parg 1 & 3). The dry powder composition of Eljamal et al also optionally comprises, a reducing agent, an anti-oxidant, and/or a chelating agent, (col 7, parg 3; see "Oxidation-Reduction" in Remington's Pharmaceutical Sciences, 1990 (pg 1507), which was incorporated by reference into Eljamal et al). Eljamal's composition is desiccated (col 10, parg 6) and is stable after drying at 80°C and then storage at room temperature for 9 months (col 10, parg 5; Table I). Therefore, Claims 1-19 and 21 are rejected under 35 U.S.C. 102(b), as being anticipated by Eljamal et al, 1998.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eljamal et al, 1998 in view of Millqvist-Fureby et al, 1999. The teachings of Eljamal et al are described above. Eljamal et al, 1998 does not teach a dry powder composition comprising recombinant human alpha 1-antitrypsin and further comprising a surfactant. Millqvist-Fureby et al teach a dry powder composition comprising an enzyme and a surfactant (pg 244, parg 2). It would have been obvious to a person of ordinary skill in the art to combine the teachings of Eljamal et al and Millqvist-Fureby et al to produce a dry powder composition comprising recombinant human

alpha 1-antitrypsin and a surfactant. Motivation to do so is provided by Millqvist-Fureby et al wherein they teach that the surfactant inhibits the time-dependent reduction in enzyme activity (Fig 3) by reducing interaction of the enzyme with the air/liquid interface and, thus, inhibiting the surface-induced conformational change in the enzyme (pg 248, parg 1 & 2). Millqvist-Fureby et al teach that this advantage of adding a surfactant also occurs for peptides in dry powder compositions (pg 244, parg 2). The expectation of success is high, as dry powder compositions comprising alpha 1-antitrypsin as well as dry powder compositions comprising a protein or a peptide and a surfactant were known in the art. Therefore, Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eljamal et al, 1998 in view of Millqvist-Fureby et al, 1999.

Allowable Subject Matter

No claims are allowable.

Final Comments

To insure that each document is properly filed in the electronic file wrapper, it is requested that each of amendments to the specification, amendments to the claims, Applicants' remarks, requests for extension of time, and any other distinct papers be submitted on separate pages.

It is also requested that Applicants identify support, within the original application, for any amendments to the claims and specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheridan L. Swope whose telephone number is 571-272-0943. The examiner can normally be reached on M-F; 9:30-7 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Nashed can be reached on 571-272-092834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SHERIDAN SWOPE/
Primary Examiner, Art Unit 1652